

**Summary of Staff Workshop, San Francisco, CA, October 14, 1999,  
And of Recommendations Resulting Therefrom  
December 13, 1999  
Appliance Rulemaking  
Docket No. 98-A&B-1**

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To: Docket No. 98-A&B-1 and participants therein

From: Jonathan Blees  
Betty Chrisman  
Valerie Hall  
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Date: December 13, 1999

Subject: **Staff Workshop on Appliance Regulations, San Francisco, CA, October 14, 1999**

1. Background

Towards the end of the September 2, 1999 Appliance Rulemaking Committee Workshop, the Efficiency Committee instructed the staff to have a workshop with interested parties to attempt to reach consensus on several issues that had been discussed earlier. This workshop was held in San Francisco on October 14, 1999. It was a successful venture. We reached consensus on several issues, and on those for which consensus was not achieved, we gained a much better understanding of each other's concerns. Staff will prepare a new version of the regulations, incorporating the agreements here and other staff-proposed changes, in a few weeks.

2. Correspondence

Eight people participated by sending letters shortly before the meeting. These were:

<i>Date</i>	<i>Writer</i>	<i>Organization</i>
August 27, 1999	Shawn Knapp	PG&E Food Service Technology Center
September 30, 1999	Charlie Stephens	Oregon Office of Energy
October 7, 1999	Larry Wethje	Air-Conditioning and Refrigeration Institute (ARI)
October 7, 1999	Charles Samuels	Association of Home Appliance Manufacturers (AHAM)
October 8, 1999	Anthony Balducci	National Electrical Manufacturers Association (NEMA)
October 12, 1999	Gary Farber	California Association of Building Energy Consultants (CABEC)
October 12, 1999	Joseph Mattingly	Gas Appliance Manufacturers Association (GAMA)
October 12, 1999	Dick Tandy	York International

### 3. Staff Participants

The following staff members participated in the workshop:

Betty Chrisman  
Valerie Hall  
Rob Hudler  
Michael Martin  
Carolyn McCormack  
Tony Rygg

In addition, Assistant Chief Counsel Jonathan Blees and John Wilson, Advisor to Presiding Committee Member Robert A. Laurie, participated.

### 4. Public Participants

The following members of the public participated in the workshop:

<i>Person</i>	<i>Organization</i>	<i>Primary Interest</i>
Peter Miller	Natural Resources Defense Council	Energy Conservation
Charles Samuels	AHAM	White goods
Bob Cushman	Frigidaire Home Products	White goods
Paul Sikir	Sub-Zero Freezer Company	Refrigerators and wine chillers
Bob Judd	Whirlpool Corporation	White goods and HVAC
Alan Kessler	Amana/Goodman Mfg.	White goods and HVAC
Larry Wethje	ARI	Air conditioners
John Hodges	ARI	Air conditioners
K. Gilley	Lennox International	HVAC
Bob Lucas	Carrier Corp	HVAC
Joe Mattingly	GAMA	Gas appliances and all water heaters
Frank Stanonik	GAMA	Gas appliances and all water heaters
Lance DeLaura	Southern California Gas Company	Gas appliances
Wally Kolberg	Southwest Gas Corp.	Gas appliances
Thomas Nussbaum	Nussbaum & Assoc.	Boilers
Patrick Higgins	P. J. Higgins & Assoc. Inc	Plumbing Equipment
Anthony Balducci	NEMA	Motors, lamps, and ballasts

## 5. Ground Rules and Disclaimers for the Workshop

It was understood that:

There would not be discussion of the question of whether or not the staff's proposed actions were preempted by federal law, but that the failure to discuss this question should not imply agreement.

Those present were acting as individuals, and in several cases needed to discuss details with other staff members or members of the organizations that they represented for confirmation. In addition, agreement by one party on one or several issues may be contingent on another party's agreement on several other issues; however, we discussed items only individually rather than as a package. (This is especially applicable to the items below where staff has reached a post-workshop conclusion. *All of staff's proposals, including the items for which consensus was reached at the workshop, are presented as a package and are dependent on other parties' agreements to the changes that will be presented in the staff's next draft of the regulations.*) Moreover, some proposed changes require modifications to the Commission's database; those changes would require additional time and money that may not be available.

Finally, Commission staff could only discuss what the staff might suggest to the committee and not what the Committee might recommend to the full Commission.

All participants followed the ground rules.

## 6. The Agenda

The proposed agenda was published and distributed as part of the notice announcing the workshop. Staff reviewed the letters noted above and added six issues that needed to be discussed. There was some overlap of agenda items, and thus these notes do not exactly match the items on the agenda, but have been edited for easier reading.

## 7. Should there be 60-day notice before a model may be sold in California, notice within 10 days of when a model ceases to be sold in California, and 45-day review by CEC of manufacturer submittals?

Consensus was reached that:

- The present arrangement for staff review is working well and should be continued, under which:
  - staff is required to acknowledge the submittal of certification data,
  - the certification is considered complete with the acknowledgement of such submittal, and
  - if staff fails to act within 45 days, the appliance is considered certified.

- The proposed requirement that certification documents must be submitted 60 days before a new model is offered for sale in California should be changed to require certification whenever a new model starts production.
- The proposed requirement that manufacturers should report when a model ceases to be sold in California should be changed to refer to when production ceases or the model is identified as discontinued.
- Models that have been identified as having ceased production or been discontinued should be retained in the active database for a fixed period before being transferred to the historical file. This period may vary between appliance types. The Commission staff should survey the various industries to determine how long this period should be. Meanwhile, the subject of deleting models from the database should continue to be addressed only as an internal management matter and not addressed in the regulations.

#### 8. Should the date of manufacture be marked on all appliances?

Consensus was reached that:

- The wording should be more precise and follow the wording in the current regulations that reads in part:  
  
Any appliance...may not be sold or offered for sale unless the month and year of manufacture, or the week and year if identified as such on the appliance, is permanently displayed in an accessible place on that appliance.
- The requirement should apply only to refrigerators, refrigerator-freezers, freezers, air conditioners, space heating equipment, and water heaters.

#### 9. Should all appliances be required to show the model number on the nameplate?

Consensus was reached that:

- The requirement that the model number be shown on the nameplate should be limited to appliances that have nameplates. For other appliances the marking should be on “an accessible place on the appliance”.

#### 10. Is it appropriate to have approval of testing laboratories, or requirements for laboratories?

No consensus was reached at the workshop on this issue.

In the current regulations this provision refers only to three types of appliance, for which the Commission has documented a history of poor compliance and for which there is no industry certification program. These are commercial water heaters, commercial refrigerators, and plumbing fittings. In the proposed draft regulations, these provisions have been extended to all types of appliances. Several industry participants opposed the provisions that would require (1) approval of laboratories by the Commission and (2) that in order to obtain approval, a laboratory must be

prepared to allow a Commission representative to witness testing.

In discussions following the workshop, staff concluded that these provisions should be limited to the three appliance types listed above, and the Executive Director should be given authority for exempting those manufacturers participating in an industry certification program that lists energy performance and that includes provisions for verification and challenge of equipment efficiency ratings. It is hoped that such a program may be launched soon for commercial water heaters.

11. For enforcement purposes, should the DOE sampling procedures or the California mean-of-two samples procedure be used for NAECA covered products?

Consensus was reached that:

- The Commission's enforcement provisions should be consistent with the federal provisions of DOE and FTC.
- The federal sampling provisions are excessively complicated and widely misunderstood.
- Section 1608(c) of the proposed California Appliance Efficiency Regulations indicates that if two units of an appliance model are tested and the mean of the measured values fails to achieve the performance claimed by the manufacturer, the model is deemed to have failed the test.
- Section 1608(c) of the current California Appliance Efficiency Regulations is similar, but for some appliances, a tolerance is included. In the case of measuring the annual energy consumption of refrigerators, that tolerance is ten percent.
- There are four references in federal regulations related to this subject:
  - **10 CFR 430.24** describes the sampling method to be used for certification to the DOE. In the case of refrigerators, the manufacturer must report the **higher** of the actual mean of a sample of two units, or the adjusted mean. There is no provision for ever reporting any value that is **lower** than the actual mean.
  - **16 CFR 305.6** describes the sampling method to be used for certification to the FTC. The value reported to FTC is the value that must be shown on the black and yellow EnergyGuide label. This section indicates that any representation shall be based on the sampling procedure in DOE's **10 CFR 430.24** (see above).
  - **Appendix B to Subpart F of 10 CFR 430** describes the DOE enforcement process for determining whether a basic model of federally regulated NAECA product certified to DOE complies with the minimum energy performance standard. It is based on testing a sample of 4 – 20 units.

- **16 CFR 305.16** indicates that upon notification by the FTC, manufacturers must provide to FTC a sample of two units. Nothing indicates what FTC would do with these units, nor how FTC would treat the results of any testing.
- There is **no** tolerance allowed in federal regulations for the reporting of performance either to DOE or to FTC.
- There is **no** tolerance specified in federal regulations for enforcement of FTC regulations.
- There **is** a tolerance allowed in federal regulations for enforcement of the DOE minimum standards, and this is described in Appendix B to Subpart F of 10 CFR 430.
- There is **no** regulation related to the accuracy of data provided to DOE as long as the model complies with the minimum standard.

In discussions following the workshop, staff concluded that:

- Of the four federal sets of sampling provisions for consumer products, three are reasonable and give adequate protection to the consumer.
- DOE's enforcement sampling provisions for consumer products are seriously flawed, are excessively complicated, are very slow and expensive to use, and give little protection to the consumer.
- Staff's proposed enforcement provisions for federally regulated NAECA products are consistent with those of the Federal Trade Commission in 16 CFR 305.16, and its certification provisions are consistent with both those of DOE and those of FTC.
- Staff's proposed enforcement provisions for federally regulated consumer products should be revised to make them consistent with those of the Department of Energy in Appendix B to Subpart F of 10 CFR 430, despite the fact that those provisions are seriously flawed.
- Staff's proposed enforcement provisions for all other products should remain as shown in the September draft proposed regulations.
- DOE's newly-published final rule for motors includes enforcement sampling requirements for those products. The next draft of proposed Commission regulations on motors should reference the federal provisions.

12. How should water heaters for which there is a federal efficiency standard but no federal test method be treated?

Consensus was reached that:

- Some water heaters exist for which there is a federal standard enacted under NAECA but for which DOE has never published a test method.
- The Commission should specify a test method for such water heaters and collect data, but it should not set a minimum performance standard.

- Michael Martin should work with Frank Stanonik to determine what that test method should be.

In discussions following the workshop, staff concluded that:

- The new ASTM test method should be specified for booster heaters (with no minimum performance standard)
- ANSI/ASHRAE Standard 118.2-1993 should be specified for storage type water heaters with volume less than 20 gallons (with no minimum performance standard),
- 10 CFR Section 430.23(e) should be specified for all other small water heaters for which DOE has not specified a test method (with no minimum performance standard).

13. Broad issues concerning federal-state relationships: (1) California determination of compliance with appliance standards contained in (either directly or via incorporation by reference) the state's building code; and (2) California requirements for submittal of information

Staff will redraft the regulations to attempt to address the concerns of all participants.

14. Is the test method for commercial refrigerators appropriate?

In an email message, Shawn Knapp identified proposed improvements to the description of the test method for commercial refrigerators. No objection was expressed at the workshop. Staff agrees with Mr. Knapp's suggestion and thus will change the footnote to Table A-1 to read as follows:

Type	Initial Average Temperature of all the Test Packages – °F	Maximum Average Temperature of all the Test Packages – °F
<i>Refrigerator–fresh food</i>	$38 \pm 1$	<i>40</i>
<i>Freezer</i>	$0 \pm 1$	<i>2</i>
<i>Reach-in wine cooler</i>	$45 \pm 1$	<i>No requirement</i>
<i>Ice cream cabinet</i>	$-5 \pm 1$	<i>0</i>

15. Should manufacturers have the option of choosing a thermal efficiency or an AFUE standard for three-phase central furnaces < 225,000 Btu/hour?

Consensus was reached that:

- Manufacturers should have the option of choosing either a thermal efficiency or an AFUE standard (but not both a thermal efficiency and an AFUE standard) for three-phase central furnaces less than 225,000 Btu/hour and other similar

equipment that slipped between the cracks of the definitions in NAECA and those in EPCA.

16. What are the appropriate reporting requirements for ranges and ovens (including microwave ovens)?

Consensus was reached that:

- DOE and FTC had decided that there should be no efficiency standard or labeling provision respectively for ranges and ovens. (Subsequent research revealed that this is only partially true. The September 8, 1998 notice quoted below stated that “DOE is not addressing gas cooking products because it has not completed its analysis of the relevant issues.”)
- Commission staff needs to determine whether the DOE and FTC decision was made because information is available that indicates that there is little possibility of a significant difference in energy performance among models or whether that decision was made because of the lack of available data.
- Chuck Samuels of AHAM offered to provide data to document the reasons while DOE and FTC made these decisions. He later provided copies of the following editions of the Federal Register:

November 19, 1979	FTC	Certification - Final Rule
October 3, 1997	DOE	Test Procedures – Final Rule
March 18, 1998	DOE	Certification - Final Rule
September 8, 1998	DOE	Standards for Electric Cooking Products – Final Rule

Chuck’s letter stated in part:

This material reflects federal findings that hours of operation and energy use by ranges and ovens are not significant, have decreased dramatically, and that standards and related reporting requirements were not technically feasible or economically justified. The FTC found that consumers would receive very little benefit from this information.

The November 19, 1979 FTC notice (published over twenty years ago) stated in part:

*3. Kitchen Ranges and Ovens.* This category of appliances is composed of conventional cooking tops, ranges, and ovens, as well as microwave ovens. Unlike conventional cooking appliances, microwave ovens use very little energy, typically less than 100 kWh per year. This amount of energy roughly equals that used by a standard 100-watt light bulb. In fact, the total average energy cost for microwave ovens probably ranges from only about \$3 to \$5 per year, depending primarily on whether or not the model has a clock.

Conventional cooking appliances are larger users of energy, in absolute terms than microwave ovens, but the difference in energy cost between the least and most efficient models is only about \$6 per year for gas ranges and about \$7 per year for electric ranges. For example, the average annual energy cost varies from \$8 to \$14 for gas ranges and from \$23 to \$30 for electric ranges.

In contrast to their small range of energy use, kitchen ranges and ovens, including microwaves, typically cost hundreds of dollars to purchase. In view of this and other factors, such as the fact that these appliances all function with about the same degree of reliability, and purchase decisions are usually based upon the appearance of the product, a consumer cannot be expected to consider as significant a possible annual energy savings of one or two dollars—or even the maximum of six or seven dollars a year. Indeed, industry members contrasted the lack of benefits from labeling with the costs that would be imposed by a testing and labeling requirement. Several manufacturers complained that their costs would be significantly increased, and one survey of microwave manufacturers showed that the testing and labeling would cost the eight firms surveyed approximately \$500,000.

Since the substantial costs of a labeling requirement would not produce corresponding consumer benefits, the Commission has determined that labeling of kitchen ranges and ovens would not be economically feasible. Accordingly, this appliance category has been excluded from the rule.

#### The March 18, 1998 DOE notice concerning certification states in part:

##### (4) Submission of Annual Energy Use for Kitchen Ranges, Ovens, and Microwave Ovens

In the proposed rule, DOE proposed to require submissions of annual energy use on a per model basis for kitchen ranges, ovens, and microwave ovens.

Both AHAM and Whirlpool noted that there are presently no minimum energy efficiency reporting requirements for kitchen ranges, ovens, and microwave ovens, that it would create an unnecessary burden on manufacturers, and recommended that the proposal be withdrawn. Section 323 (a)(1)(B) [states] that the Secretary may prescribe test procedures for a consumer product classified as a covered product. Even without minimum efficiency standards for a covered product this information could be used to assist consumers in purchasing more efficient products. However, DOE does recognize that testing and reporting of efficiency data does place an added burden on manufacturers and therefore is withdrawing this requirement for kitchen ranges, ovens, and microwave ovens at this time. (Emphasis added)

#### The September 8, 1998 DOE notice concerning standards for electric cooking products states in part:

DOE today promulgates this final rule to address the energy conservation standard for electric cooking products (including microwave products) and substitute the term “cooking products” for the current, obsolete term “kitchen ranges and ovens”. DOE is not addressing at this time gas cooking products because it has not completed its analysis of the relevant issues. (Emphasis added)

DOE has determined that there would be no significant conservation of energy for electric cooktops, electric self-cleaning ovens, and standards would not be economically justified. Therefore, the Department will not add new standards for these products. The Department, however, is amending its regulations to substitute the name “kitchen ranges and ovens” with “cooking products”. (Emphasis added)

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On March 4, 1994, DOE published a notice of proposed rulemaking (NPR) concerning eight products, including the kitchen ranges and ovens. (hereinafter referred to as the Proposed Rule). The Department proposed that the annual energy use of kitchen ranges and ovens shall be the sum of the annual energy use of any of the following components incorporated into the kitchen and oven and shall not exceed the allowable sum of energy usages for those components listed in Table 1-1. These proposed standards were estimated to save 5.9 quads.

Table 1-1.—Proposed Standards Levels For Kitchen Ranges and Ovens

<u>C. Kitchen Range and Oven Components</u>	<u>Annual Energy Use, effective 9/10/2001</u>
1. Electric ovens, self-cleaning	267 kWh.
2. Electric ovens, non-self-cleaning	218 kWh.
3. Gas ovens, self-cleaning	1.64 MMBtu.
4. Gas ovens, non-self-cleaning	1.14 MMBtu.
5. Microwave ovens	233 kWh.

6. Electric cooktop, coil element	260 kWh.
7. Electric cooktop, smooth element	294 kWh.
8. Gas cooktop	1.71 MMBtu.

After reviewing the comments on the proposed standards for kitchen cooktops, conventional ovens, and microwave ovens, the Department concluded that a number of significant issues were raised which required additional analysis. In 1995, the Department revised the analysis regarding kitchen cooktops, ovens, and microwave ovens to account for the comments and data received during the public comment period. (This revised analysis became the basis for the 1996 Draft Report.)

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The Department is required by statute to promulgate energy efficiency standards for cooking products if economically justified and technically feasible. EPCA, § 325, 42 U.S.C. § 6295. The Department's ENERGY STAR ® program helps to educate consumers on the purchase of more energy efficient appliances. The program is increasing continually the list of products the program covers. One of the criteria the program uses to determine which products it should add to the program is an evaluation of whether there is a wide range of energy efficiencies among the products in the marketplace. Because there is not a wide range of efficiencies for cooking products, they have not been added to the Energy Star program thus far.

In reviewing these notices, staff determined:

- DOE changed the name of the category from "Ranges and Ovens" to "Cooking Products." The California regulations should do the same.
- No data was provided related to gas equipment.
- Despite DOE's conclusions, the notices quoted above, indicate that there are significant differences among different types of cooking products. For instance, DOE's proposed standard for self-cleaning electric ovens is 22 percent greater than that for non-self-cleaning ovens. DOE's proposed standard for self-cleaning gas ovens is 35 percent greater than that for non-self cleaning ovens. DOE's proposed standard for electric cooktops with smooth elements is 13 percent greater than the proposed standard for electric cooktops with coil elements.
- Model by model energy performance data would be useful to purchasers of cooking products.
- There is no evidence that shows whether or not manufacturers are aware of the energy use of the products they manufacture. However it is clear that manufacturers should be aware of this important facet of their designs.
- The provisions in the draft regulations for reporting the performance of cooking products should remain in place, but they should not take effect until federal performance standards take effect.

## 17. Television Sets

After an informal meeting on October 28, 1999 with members of the TV manufacturing community, staff has determined that:

- Both EPA and DOE have published methods of test for televisions. The EPA method, developed and used for its EnergyStar® program, measures the energy use during standby. The DOE method measures the energy use during standby, and the energy use during operation. There is consensus among manufacturers that the EPA method, and the portion of the DOE method related to standby energy use are equivalent.
- Manufacturers are dissatisfied with the portion of the DOE test method that measures energy use during operation. A major reason for this dissatisfaction is that the method ignores energy variations due to the sound element and other features.
- The EPA and FTC decided that there should be no efficiency standard or labeling provision for television sets.
- The EPA has set the following qualifying levels for its EnergyStar program:

Product	Energy Use in Standby Mode
TV	3 watts
VCR	4 watts
TV/VCR Combination	6 watts

- The electronics industry continues to develop very fast, and its development naturally has led and continues to lead to the long term reduction of energy use.
- Setting of new performance standards is not within the scope of this rulemaking.
- Listing energy use of televisions identified only by model number would be of little value, and in many cases misleading. Thus the Commission's database must reflect different categories reflecting class of equipment, picture size, and other features. The manufacturers have committed themselves to provide advice on what features should be taken into account by mid-December.
- It was reported that there are 18 manufacturers of televisions that market their products in the US and estimated that on average, each manufacturer has about 100 models, making an estimated total number of entries in the data base of 1800 models.

Staff has since obtained and reviewed the following documents:

- *Energy Use of Televisions and Videocassette Recorders in the U.S.. Final Report, prepared by Lawrence Berkeley National Laboratory for U.S. Department of Energy. March 1999.*
- *Consumer Reports, March 1998. Pages 24 – 36. 27-Inch TV Sets.*
- *Consumer Reports, February 1999. Pages 20 – 25. Big Screen TV Sets.*

From these documents, staff has determined:

- Lawrence Berkeley Laboratory's contractors measured the energy use of the following appliances:

Parameter measured	Number Tested	Range
TV standby power draw	365	0 to 21 watts
TV active power draw	372	30 to 220 watts
VCR standby power draw	126	3 to 13 watts
VCR active power draw	126	6 to 39 watts

Excerpts from the Executive Summary and Conclusions are reproduced below:

#### Executive Summary

This study was undertaken to estimate current energy use of residential televisions (TVs) and videocassette recorders (VCRs) in the United States. Ownership and usage statistics were taken from media research, while average power values were derived from power measurements of nearly 500 units, shown above.

When grouped by product characteristics, these power measurements indicate that TV active power draw is closely related to screen size (see Table ES-1) and manufacturer, while TV standby power draw is related only to manufacturer, VCR idle and standby power draw levels are related to manufacturer and year of manufacture: VCR power draw values have been steadily decreasing since 1985. Because of these relationships, average power values were weighted by industry-based estimates of the age, manufacturer, and size distributions of U.S. TVs and VCRs to ensure average power draw estimates that are representative of current U.S. stock.

Table ES-1. Average TV power draw by screen size

Screen Size (inches)	Average Power	
	Active (watts)	Standby (watts)
<=18	47	3.1
19-20	68	5.1
25-27	90	4.9
30-36	114	5.3
39+	142	3.5
Weighted average	75	4.5

To estimate national TV and VCR energy consumption values, ranges of power and mode usage were created to represent usage patterns in homes with more than one unit. Average energy use for homes with one unit, two units, etc. were calculated and summed to provide estimates of total national TV and VCR energy consumption.

Results indicate that TVs and VCRs comprise 3.6% of U.S. residential electricity consumption. In homes with at least one TV, the average annual household TV energy consumption is 310 kWh, 23% of which is consumed while the sets are off. In homes with at least one VCR, the average annual household VCR energy consumption is 100 kWh, over 50% of which is consumed while the units are off. A summary of U.S. TV and VCR energy use is shown in Table ES-2. Calculated values are rounded to two significant digits.

**Table ES-2. Summary of residential TV and VCR energy use in the U.S.**

	TVs		VCRs	
Average active power (watts)	75		17.0	
Average idle power (watts)	--		13.5	
Average standby power (watts)	4.5		5.9	
Average household energy use	(kWh/home)	(%) <sup>a</sup>	(kWh/home)	(%) <sup>a</sup>
1 unit home	260	32%	71	63%
2 unit home	310	38%	140	28%
3 unit home	340	19%	210	8.2%
4 unit home	370	7.8%		
5 unit home	400	2.8%		
Weighted Average (kWh/home)	310		100	
Total U.S. energy (TWh/yr)	31		9.1	
Percentage of U.S.				
Residential electricity use	2.8%		0.82%	

<sup>a</sup> Share of U.S. homes

This report estimates the energy use of TVs and VCRs in the residential sector only. Total U.S. TV and VCR energy consumption is expected to be roughly 10 to 15% higher, depending on the number of TVs and VCRs in the U.S. commercial and industrial sectors and the usage of those units.

### Conclusions

This study investigated power draw levels and national residential energy use of TVs and VCRs in the U.S. We found that the active power draw levels of TVs are closely related to screen size, while standby power draw levels seem to depend only on manufacturer. In addition, it appears that some TV and VCR manufacturers consistently make more efficient units than others do. Although average power draw levels of TVs have remained relatively stable over the past 15 years, VCRs have become significantly more efficient.

The average active and standby power draw levels of U.S. TVs are 75 and 4.5 watts, respectively. Annual household energy consumption levels of TVs range from 260 kWh for a home with one set to 400 kWh for a home with five. Average household energy consumption is 310 kWh per year. Nationally, residential TVs use 31 TWh of electricity per year, or about 2.8% of U.S. residential electricity consumption.

The average play/ record, idle, and standby power levels of U.S. VCRs are 17.0, 13.5, and 5.9 watts respectively. Annual household energy consumption levels of VCRs range from 71 kWh for a home with one unit to 210 kWh for a home with three. Average household VCR energy consumption is 100 kWh per year. Nationally, residential VCRs consume 9.1 TWh of electricity per year, or 0.8 % of U.S. residential electricity consumption.

Combined, TVs and VCRs, including TV/ VCR combination units, use 40 TWh/ yr, or 3.6 % of U.S. residential energy consumption.

Current trends demonstrate that the TV and VCR end-uses are likely to undergo many changes in the next decade. For this reason, the results presented in this report will be valid only for a brief time, perhaps less than three years, before a reassessment is needed.

- Testing for energy use of televisions and VCRs is the least costly of all appliance performance testing. LBNL's contractors were paid \$2.00 per set for measuring and reporting power draw.

Staff obtained the following information from the two Consumer Reports issues:

- The March 1998 issue listed the “key features” that a purchaser might want. The list includes automatic flesh-tone adjustment, color “warmth” adjustment, automatic volume control, S-video-input jack, video-noise-reduction switch, two or more input jacks, audio output jacks, front input jacks, ambience sound, extended-data-services (EDS), side-firing speakers, TV Guide plus, picture-in-picture (PIP), closed captioning when muted, channel block-out, and “smart” remote. There is no indication which of these features effects the power draw.
- The February 1999 issue lists some (but not all) of the same features and adds commercial-skip timer.

In discussions following the workshops, staff concluded that:

- The proposed regulations should require the reporting of active energy draw and standby energy draw for all televisions and TV/VCR combinations.
- The proposed regulations should not require the reporting of energy draw for VCRs that are not part of combination TV/VCR appliances. These are outside the scope of the current rulemaking.
- The proposed regulations should not set minimum performance requirements for televisions or VCRs since such requirements would be outside the scope of this rulemaking.
- Manufacturers should be required to report the manufacturer’s name, brand name, model number, screen size, and whether or not they have specific features, in addition to active and standby draw. Staff should use the services of the manufacturers to develop a list of such features.

## 18. Motors

It was announced that DOE had published its final rule for motors in the October 5, 1999 Federal Register.

Consensus was reached that the Commission staff and NEMA staff should study this notice to determine whether it should result in modification to the staff proposal for motors.

Staff has since reviewed the October 5, 1999 notice and concludes:

- Unlike other NAECA products whose provisions are included in 10 CFR Part 430, provisions for electric motors are included in a new 10 CFR Part 431.
- Some of the definitions in 10 CFR 431.2 are much more precise than those in EPart. This significantly reduces uncertainty about the scope of the provisions.
- DOE has adopted, as an appendix to 10 CFR Part 431, a November 5, 1997 “Policy Statement for Electric Motors Covered under the Energy Policy and

Conservation Act.” This appendix covers nine entire pages in the October 5, 1999 Federal Register notice.

- The method of test for motors is described in Appendix A to Subpart B of 10 CFR Part 431.
- Unlike the provisions for other appliances, DOE includes provisions for recognition of “*accreditation bodies*”, *nationally recognized certification programs*” and “*accredited laboratories*.”
- Testing must be performed in a testing laboratory accredited according to the provisions of 10 CFR 431.25. These provisions recognize:
  - ❖ Laboratories accredited by NIST/NVLAP,
  - ❖ Laboratories accredited by accreditation bodies having a mutual recognition arrangement with NIST/NVLAP,
  - ❖ Laboratories accredited by an organization recognized by DOE under provisions of 10 CFR 431.26.
- 10 CFR 431.24(a) describes various methods of determining efficiency. One such method is inclusion in a “*nationally recognized certification program*” recognized by DOE under the provisions of 10 CFR 431.27.
- Unlike other appliances, there is no specified sampling method for certification.
- The new regulations require manufacturers to report the performance of only their least efficient basic models in each category. There is no requirement for reporting model-by-model performance data.
- There are numerous references to basic models and basic model numbers. There appear to be no references to the model number as it appears on the motor.
- The enforcement provisions described in 10 CFR 431.127 differ from the corresponding section in 10 CFR Part 430. There is an Appendix B to Subpart G of Part 10 CFR 431 which describes a statistical sampling plan for enforcement testing, and requires an initial sample of five and maximum sample of twenty units.

In discussions following the review of the Federal Register, staff concluded that the Commission’s regulations should continue to include wording that requires motor manufacturers to provide performance data, but the regulations should also include a provision that gives the Executive Director the authority to exempt manufacturers from the reporting provisions, where after a public hearing, he/she determines that adequate information is contained in the electronic database of another organization, and that a connection from the Commission's database would provide adequate service to the public.

Staff also concluded that the CEC regulations should include the same motors as are

within the scope of the federal provisions, and that they should also include a provision that indicates that building inspectors are not required to check compliance of motors that are part of appliances for which there is a standard already listed in the regulations.

### 19. Plumbing Fixtures

No decision was made at the workshop related to this type of appliance.

In discussions following the workshop, staff concluded that:

- The Commission currently maintains a voluntary database for water closets and urinals. The proposed standards would make reporting mandatory.
- The standard for water closets (excluding blowout water closets) is 1.6 gallons per flush. The standard for urinals is 1.0 gallons per flush.
- The Commission's database lists models from 0 through 1.6 gallons per flush. Virtually all models are listed at or very near to the standard. The exceptions are :
  - a single model of waterless urinal rated at 0 gallons per flush and
  - several models of water closets and urinals for use in vacuum systems (such as are frequently installed in airplanes) all rated at 0.5 gallons per flush.
- Since all water closets and urinals for conventional applications use very similar amounts of water per flush, a mandatory list of such fixtures would be of little value to someone selecting one.
- Since all water closets and urinals are prominently and permanently marked with their flush rates, there does not appear to be a need for additional marking requirements.
- In view of the above considerations, the regulations should continue to include wording that requires manufacturers to provide performance data, but the regulations should also include a provision that gives the Executive Director the authority to exempt manufacturers from the reporting provisions, where after a public workshop he/she determines that adequate information is contained in the electronic database of another organization, and that a connection from the Commission's database would provide adequate service to the public.

### 20. Are efficiency standards for wine chillers appropriate, and if so what should they be? What reporting requirements are appropriate?

Sub Zero reported that the annual sales of wine chillers in the US was currently 40,000 units per year, and estimated that about 20 percent or 8,000 units per year were sold in California. This is between \_ and 1 percent of the total for domestic refrigerators.

Consensus was reached that:

- Mandatory reporting of performance of wine chillers should continue.
- A modified test method should be developed for wine chillers since their operating temperatures are different from those of conventional refrigerators.

In discussions following the workshop, staff concluded that there should be no performance standard for wine chillers at this time.

21. Has the Commission adopted new standards by moving some provisions from Title 24 to Title 20?

Consensus was reached that:

- It was not the intent, in moving equipment performance standards from Title 24 to Title 20, to adopt any new substantive requirements.

Staff will review the most recent draft of the proposed regulations to determine whether substantive changes have inadvertently been made and will correct any errors in the next draft.

22. Should the Commission require the submittal of a test report when the first unit has been tested and shown not to meet the claimed efficiency?

No consensus was reached this point.

Some suggested that it was acceptable for the Commission to request a test report but not to require it. Staff pointed out that this provision is currently in Section 1608(c)(2)(B) and appears to be working well, and notes that in many cases, manufacturers had been unable to produce test reports. It was also suggested that the regulations require a test report only where there is strong evidence of noncompliance.

In discussions following the workshop, staff concluded that these existing provisions should be retained. When a test of one unit shows a performance other than as reported, there is strong evidence that the model indeed is in noncompliance or that its performance is not as reported.

23. Geothermal Heat Pumps

There are three types of geothermal heat pumps, with three different test methods and regulatory status:

<i>Heat pump type</i>	<i>ARI Test method</i>	<i>Regulatory status</i>
Water source heat pump	ARI 320-93	Federally regulated under EPAct
Ground water source heat pump	ARI 325-93	Non-federally regulated, California regulated
Ground source closed loop heat pump	ARI 330-93	Unregulated at this time

ARI currently submits performance data on behalf of some manufacturers for all three of these types based on the ARI test methods. ARI plans to replace its test methods with ISO (international) standards and report performance of water-source heat pumps during the year 2000 using both the ARI and ISO test methods. It plans to report performance of ground water-source heat pumps and ground source heat pumps during the year 2000 using the ISO test method only. No decision was made at the workshop on this issue.

In discussions following the workshop, staff concluded that:

The Commission should collect data for all three heat pump types using both the ARI and ISO test methods, and specify both test methods in Section 1603, until the end of the year 2000. In the year 2001, the Commission should base its standards and reporting requirements on the use of the ISO standard only. Commission staff has requested ARI to postpone its dropping the publication of data based on the ARI standards until the beginning of the year 2001.

#### 24. Unique Model Numbers for AC Equipment Options that Affect Energy Consumption and Filing by Manufacturers

No consensus was reached on this issue.

CABEC members have stated that manufacturers frequently list air conditioner efficiencies with ARI and CEC that do not represent the equipment that is shipped. The main problem appears to be related to the indoor fan energy use. The following is an extract from the Draft final report of a Commission Public Interest Energy Research (PIER) project with Pacific Gas and Electric Company:

It was determined that neither the baseline unit nor the high efficiency dual compressor unit could achieve a measured EER that met their published ARI ratings. The baseline EER 8.9 unit had a measured EER of 8.02 at ARI conditions and high efficiency dual compressor EER 11.0 unit had a measured EER of 8.40 at ARI conditions. Much of the short-fall was due to large fan energy use.

CABEC members continue to assert that the same model of air conditioner is shipped with different options of fan motors, but with the same model number and thus the same claimed efficiency.

EER is calculated by dividing the cooling capacity by the sum of the compressor electrical input, the outdoor fan electrical input and the indoor fan electrical input.

In discussions following the workshop, staff concluded that:

- Additional factual information is needed. A conference call was called on November 22 to obtain such information. Discussions are continuing.

## 25. Marking of Commercial Appliances

No consensus was reached on this issue.

CABEC and NRDC both argued for a requirement that performance data should be provided on the appliance and printed material that is displayed or distributed at the point of sale. In 1992, DOE was instructed by Congress to publish a rule requiring such action, but to date has not done so, nor set a date when it plans to do so. The federal rule would apply to commercial air conditioners, commercial furnaces, commercial boilers, commercial water heaters and hot water storage tanks. Some industry participants argued that the Commission should leave this action up to DOE, while others argued that if California were to adopt provisions, DOE would soon adopt the California provisions into federal law and thus preempt the California provisions.

There was consensus that most of the information is already being provided in the printed material, and some of it already appears on the nameplates. The point of disagreement appears to be whether EER, COP, thermal efficiency, combustion efficiency, standby loss and storage volume should be shown on the appropriate appliances.

In discussions following the workshop, staff concluded that:

- Hot water storage tanks are outside the scope of this rulemaking.
- There is a large difference of need for such provisions between boilers, where the need is greatest, and air conditioners, where the need is less acute.
- The advantage of showing the data on the appliance far outweighs the minute cost per unit for adding the data to the nameplate.
- The marking provisions in the proposed draft should be modified. First, the marking provisions should initially apply to furnaces, boilers, and water heaters. Second, the Executive Director should be given the authority of exempting from the requirements those appliances that are subject to an industry program that requires adequate marking, and of adding the requirements for those appliances where no such program exists.

## 26. Combination Water Heating and Space Heating Equipment

Section 1604 of the proposed regulations includes the sentence “If an appliance can serve more than one function, such as both heating and cooling, or both space heating and water heating, it shall comply with all the requirements applicable to each function.” This sentence had been moved from Title 24, Section 112. In that context it applied only to equipment listed in Section 112. This equipment is now listed in Section 1604.3.

Consensus was reached that:

- The regulations should clarify that the sentence applies only to appliances listed in section 112 of the current building standards.

27. Should third party data submissions be restricted to providing only changes to previously submitted data, rather than providing the entire database?

No consensus was reached on this question.

ARI stated that in the past, the entire database was submitted every two months, rather than just the changes. ARI states that this change of routine would be expensive for ARI and its contractor, Intertek Testing Services.

Staff noted that the practice of resubmitting the same identical data several times over was overloading of the Commission's historic database.

In discussions following the workshop, and following discussions with Intertek, staff concluded that:

- The current third party process is not in the existing regulations and exists only through the Commission orders.
- The current practice was suggested by Intertek and was the only method by which Intertek could supply the data at that time.
- Intertek now has the capability to change its method as outlined in the draft regulations.
- The proposed wording in 1605(h)(2)(A) should remain as written, with the provision that the requirement would not go into effect before July 2001.

28. Certification Forms

Table T lists the forms that must be used to report performance data to the Commission. Staff prepared a set of tables to be used in updating the forms. Several entries were questioned and a few errors corrected. Consensus was obtained on these corrections.

In discussions following the workshop, staff concluded that Table T should list the data that must be provided by manufacturers rather than the forms themselves being adopted into the regulations. The Executive Director should specify the format of the forms.

## 29. Test Methods for Infrared Heaters

Following the workshop, staff reviewed the draft ASTM Standard Test Method for the Performance of Patio Heaters and determined that manufacturers of infrared patio heaters should have the option of reporting the performance of their products using either this ASTM draft method or ANSI Standard Z83.6-1990